JANUARY 1961

Cost and Management

THE SOCIETY OF INDUSTRIAL & COST ACCOUNTANTS OF CANADA
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Journal of the Society of Industrial and Cost Accountants of Canada

COMING EVENTS - 1961

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February 22-24 — *Scarborough, Ontario*
The Guild Inn

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G. E. Terris, Vice-President,
Payne-Ross Limited, Toronto, Ontario.

D. R. Gilmaster, Controller,
Omark Industries Ltd., Guelph, Ontario.

March 1-3 — *Banff, Alberta*
Banff School of Fine Arts

MANAGERIAL CONTROLS

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The 40th Annual Cost and Management Conference

June 28-30 — *Vancouver, British Columbia*
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Editorial Comment . . .

A New Year—A New Look

IN THIS FIRST ISSUE of 1961, you will notice, no doubt, some changes in *Cost and Management*. We thought it would be appropriate to let our readers know why these changes were made.

For some time, many members of the Society and other subscribers have expressed a desire to have both the *S.I.C.A. Newsletter* and the *Student Newsletter* included in the journal. In this way, they would have a current source of information on activities in the Society and of developments in the curriculum and student areas.

Essentially, the activities of S.I.C.A. are directed towards making people more knowledgeable in the business world. The core of S.I.C.A. is still the educational course that leads to the (R.I.A.) Registered Industrial Accounting designation. However, through the years, other facets of the Society have developed to fill a need in the business world. Some 33 chapters are now operating across Canada, the purpose of which is to provide member fellowship and a common meeting place to discuss mutual problems and hear authoritative speakers. The publications service has been upgraded by a steadily improved content in *Cost and Management*, an expanded library lending service, and the recently added *Special Study* series.

In the conference and seminar area, more business executives each year are showing a greater appreciation of the value of study and discussion with men of equal stature in fitting themselves more ably for business leadership.

If one assesses the many activities of S.I.C.A., he will find a common underlying purpose of filling a need in the business world. By making knowledge and information available to those engaged in business, S.I.C.A. helps them develop their potential strengths and perform their jobs more effectively in a competitive society.

Because the business world has shown such interest and support for S.I.C.A. programs by obtaining membership in the Society, by subscription to *Cost and Management*, by attendance at conferences and seminars, by joining in chapter activities, and by your many letters of inquiry and commendation, the directors of the Society have decided to enlarge *Cost and Management* and devote a special part of the journal to keeping you informed of what is going on in each area of S.I.C.A., even though you may be unable to participate in all the activities.

Each month, a section of *Cost and Management* will be filled with "S.I.C.A. News". This section will replace the old *Newsletters*. Essentially, the purpose of this section will be to cover the major areas of activity in Chapters and Membership, Conferences and Seminars, Publications and Technical Services, and the important area of Students and Courses. The amount of space given to any one activity in a month will depend upon its relative importance in Society affairs at that time.

We would like to say at this time that the inclusion of "S.I.C.A. News" in *Cost and Management* will in no way detract from the emphasis and space allotted to the technical articles. On the contrary, it is our purpose to strive steadily for improvement in technical content and reader interest. We invite your suggestions, criticisms, and submissions of manuscripts for possible publication. It is only by being aware of your needs and interests that we can try to serve you well.

We hope you like the new look, and take this opportunity to wish all our readers

A HAPPY AND PROSPEROUS NEW YEAR

PUNCHED CARD AND/OR ELECTRONIC COMPUTER FEASIBILITY STUDY

By Bert Lockwood,
Corporate Financial Systems Programmer,
North American Aviation, Inc.,
Los Angeles, California.

The greater clerical work load and expense that accompanies greater production can, in most cases, be reduced through revision or simplification of the data processing system. This article reviews some of the factors that enter into a study of the feasibility of installing a punched card or computer system and outlines an approach to the various problems involved.

BUSINESS has been characterized by a streamlining of factory and production methods in order to achieve higher production at a lower unit cost. Office management, however, has increased the data processing output required by this higher factory production, more by increasing the clerical force than by lowering unit costs through simplifying or redesigning the data processing system. Admittedly, system redesign is a difficult and involved task, requiring a careful study of each data processing system being used in order to remove overlapping or useless operations. The process is often further complicated by organizational and personal jealousies and inadequate knowledge of modern methods.

DATA PROCESSING METHODS

A data processor may be a clerical staff, a punched card system or an electronic computer with all gradations in between. In order to produce the output reports, the data processor must be able to:

1. Read documents
2. Read documents and reports
3. Sort and classify data
4. Calculate
5. Make simple decisions

The discussion of data processing systems which follows is intended to point out the similarities and differences in over-all approach required by each type of equipment.

(A) MANUAL METHODS

In low volume work, a human being has the considerable advantage of requiring no translation of business records or transactions. His methods can be changed with relative ease. However, he is susceptible to error, especially if the work is highly routine or if the work load is heavy. The speed of calculating, posting, and printing is slow; and for a large volume of work his cost is disproportionately high.

(B) KEY-DRIVEN DEVICES

The next step in the direction of the automatic office is in improving a manual system by adding key-driven devices. This includes such standard office equipment

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Mr. Lockwood is a graduate of Northwestern University. He is now employed by North American Aviation, Inc., Los Angeles, as Corporate Financial Systems Programmer, a position he accepted after serving as Corporate Systems and Procedures Manager for Harvey Aluminum, Inc., of Torrance, California.

as typewriters, adding machines, calculators and accounting machines. In general, these devices mechanize the calculation and printing functions of the data processor. In their simplest form, these key-driven devices are either a typewriter performing the printing function only, or an adding machine performing addition or subtraction functions. By appropriately combining the printing and calculation functions and, further, by building in a more elaborate control mechanism which can govern addition and subtraction, a class of calculators capable of performing all four arithmetic operations and the automatic printing of results has been produced. They are in common use.

A further extension of the printing-calculator principle to provide greater flexibility in the format of printed results, has led to the typical accounting or bookkeeping machine. A trend of very recent origin is the connection to these accounting machines of paper tape punches which provide a means of direct communication to other types of calculating and computing mechanisms without the need for re-transcription of data. These devices are members of a common language data processing system.

For moderate volumes of data involving relatively short sequences of calculations, unit cost is low. Speed and accuracy are greater than manual methods, and trained and experienced personnel are available. Changes in procedure and forms are accommodated with relative ease.

One disadvantage of key-driven devices is that data translation to a machine readable form is necessary, with translation consisting of the entry of data into a keyboard. Another disadvantage is that the sorting and classifying of data, decision making, and the sequencing of operations must be done by human intervention.

(C) PUNCHED CARD MACHINES

Prior to 1953, punched card equipment marked the apex of office automation. The general plan of punched card equipment is to provide specialized machines which perform each of the five basic elements of the requirements listed for a data processor, although in some cases a single machine may perform several such functions. These machines are sorters, tabulators, calculators, interpreters, collators, key punches and reproducers. These machines form a common language group. The punched card serves as a data communication and storage medium.

As compared with key-driven or manual methods, punched card machines have speed, accuracy and low unit cost for relatively large volumes of work, as well as permitting variety and completeness in reports. Personnel, however, are relatively highly trained, changes in procedure and forms are usually difficult, and the scope of operations performed is limited so that exceptions must be handled manually. There is, in addition, the arbitrary limitation of record size to either 80 or 90 digits, or multiples of 80 or 90 digits, and again the initial entry of data still requires a translation operation.

(D) ELECTRONIC COMPUTERS

While large scale commercial electronic computers are frequently employed for the solution of scientific problems, their more common use is for business applications, such as the computation of large payrolls, billing inventories, etc. These problems are characterized by the vast quantity of input and output data. Very few cal-

culations must be performed to compute each individual paycheque; the problem lies in the number of paycheques to be computed. The electronic computer performs automatically all of the five basic data processing operations previously discussed. This is achieved by recording on magnetic tape the sequence of instructions which the computer is to follow in its role as a data processor.

The same advantages and disadvantages which apply to punched cards also apply on a much larger scale to electronic computer systems. Tremendous speed, accuracy, large volume, and low unit cost, are attained at the expense of having highly technical systems and skilled programming and operating personnel.

RECOMMENDED APPROACH TO THE FEASIBILITY STUDY

At this point, we have mentioned the advantages and disadvantages of manual, key-driven, punched card and electronic computer methods. A feasibility study consists basically of weighing the advantages and disadvantages of these methods and the various equipment as they pertain to your objectives. For the purpose of this discussion, the term AUTOMATION means a conversion from manual methods to mechanical or electronic methods. This makes the principles set forth applicable to firms of varying size and complexity. Either one man or a committee may be delegated to make the study, depending on the size of the firm.

There are three major elements to be considered when determining the feasibility of entering the field of automation:

(1) The *problem*, or scope, of the application
(2) The *economics* surrounding the problem
(3) The *education* required to effect a successful solution by the use of automation. These elements are considered one at a time.

PLANNING THE PROBLEM ANALYSIS

Three points should be kept in mind as the study program is outlined:

1. Do not limit your evaluations to a single-unit application. Plan in terms of your over-all business, whether it be a single-unit operation or a multiple-unit operation.
2. After the over-all scope is established, then plan in terms of the single-unit application—such as; payroll, sales analysis, customer billing and operations cost analysis—that will fit in with your company-wide planning.
3. Do not accept the methods used in your present operations as criteria for your automated system. The study program should incorporate a new approach or, at least, a review of techniques that will produce a more efficient system. When the program is conducted with these points in mind, the data accumulated should make possible an accurate evaluation and determination of:
   a) The automation equipment required to solve your operational problems.
   b) The specific areas of activity, and how they may be brought together.
   c) The volume of data to be processed and the cycle time of reporting. The results of the over-all problem analysis study are usually extremely valuable in establishing a well-coordinated, detailed working program to accomplish the desired end result on an objective basis. This method allows you to gather sufficient data to determine the feasibility of the project; the way in which the system would operate, its reporting abilities,

and an evaluation of the gains to be made through its use.

Many techniques are used to accomplish a successful problem analysis. My general philosophy of approach is built around these fairly simple fundamentals:

a) Any operation, whether it involves an entire corporation or the smallest unit or segment of the corporation, has a purpose for its existence and a function to perform in the over-all scheme of things.

b) An organization is made up of a series of interlocking functions. When these functions are defined and coordinated, the basic primary and secondary functions may be determined. For example, the primary function of a sales unit is obviously to sell goods. Its secondary function might be to supply data on sales to the manufacturing planning unit. Similarly, the primary function of the planning unit might be to lay out manufacturing schedules, while often its secondary functions might be to report anticipated delivery schedules or specific delivery data on customer orders to the sales unit.

c) Each unit has specific assigned responsibilities which are defined. In discharging these responsibilities, decisions are made and these decisions become the data which, when analyzed, describe the true functional activity of the unit.

It is a fairly simple planning job to block out an entire company and conduct a fact-finding survey of each unit. By determining the decisions made within each block, the activity within the block and the interlocking action between blocks are established. This approach ignores present methods or procedures and produces objective data that have not been impregnated with tradition and personal opinions.

By arranging, in logical sequences, the decisions to be made in discharging any given responsibility and providing for the interlocking activties resulting from these decisions, one can develop an optimum work flow or procedure. This provides a sound base from which an evaluation of various types of automation equipment, their abilities, and their potential uses can be conducted.

ECONOMICS INVOLVED

With the approach or general format of operations determined as the result of the problem analysis, an evaluation can be made of the remaining two elements of feasibility:

Economics and Education. The economics can be classified into two separate and distinct categories:

1. *Tangible* or direct savings, which may be defined as the decrease in cost resulting when the present operation is replaced by the proposed operation.
2. *Intangible* or indirect savings, which are much more difficult to define and equally difficult to substantiate.

The TANGIBLE savings are relatively easy to list:

1. Personnel—savings effected as we move from manual to automation.
2. Floor space—estimated at about $X per sq. ft. with 50 sq. ft. per person plus filing space required to support the average clerical effort. Savings effected through more efficient floor space utilization become a real factor in cost reduction.
3. Personnel turnover—possible reductions in any given operation.

4. Supervision—reduction in the cost of supervision required with manual methods—more people, more supervision.
5. Consolidation of operations—the reduction in cost effected by combining two or more operations into one.

INTANGIBLE savings resulting from installation of automated equipment may be listed as:

1. Reporting—savings resulting from the ability to obtain more information, composite types of reporting, and analytical type of reporting.
2. Timing of reports—savings that can be made by furnishing operational reports so frequently that remedial action may be taken effectively.
3. Methods and Procedures—savings resulting from a completely new approach to methods and procedures, which frequently provokes completely new areas of speculation.

When preparing a summary analysis of the economies surrounding any given application, the tangible gains and losses are easily recorded. The common approach is to compare the present annual cost with the estimated cost of the proposed application. If the comparison indicates that it will break even or show a gain, it will be advisable to stop the cost analysis at this point. It is unnecessary to attempt an evaluation of the intangibles, for it is generally accepted that the intangibles will always add to the savings effected.

EDUCATIONAL REQUIREMENTS

Education is the third element to be considered when determining the feasibility of entering the field of automation. It must be thorough and complete in all phases of any program. It is perhaps the most difficult factor to define. Education must be carried on at all levels.

1. The management level
2. The operational level
3. The level of personnel connected with, or responsible for, the preparation and use of data moving to or from functional operations tied into the system. This is effected through conferences held with the feasibility committee at the various levels.

RESULTS TO BE EXPECTED

As an example of the kind of results that can be obtained from a well-conducted feasibility study, it might be useful at this point to outline the progress a company has made in its program, the major decisions that have been made, and the reasons for these decisions:

1. The over-all company survey was completed. The major blocks were defined, the responsibilities noted, and a register of the decisions in operating areas established.
2. A realistic forecast or evaluation of gains to be made was prepared.
3. A detailed plan for attacking each of the functions in the company-wide

operation, together with a time schedule (or target dates) for performance was drawn.

4. An evaluation of the data was made and the types of equipment to be used were determined.

The results of an analysis of the data were most interesting. Here are some of the major operating conditions that were brought to light:

1. Major responsibilities, although quite well defined, were split between major areas of function. This condition existed primarily between the sales function and the manufacturing function.
2. Because of these split responsibilities, it was often necessary to maintain duplicate—or even triplicate sets of records.
3. Owing to the maintenance of these duplicate and triplicate sets of records, the cost of operation was out of line when compared with the actual work to be done. The flow of the detail was not only complicated and cumbersome, but also costly.
4. In order to maintain adequate control and operating balances between functional areas, the problem of reconciliation and reporting was rather acute.
5. The reconciliation of reporting was practically impossible. The daily operational decisions were made on a command-performance basis rather than on a basis of a normal output of well-coordinated, well-reported operating data.
6. With several sets of data to be reported from and decisions being made on a command-performance basis, the adjustments in physical operations created confusion and costly rework.

Some of the findings fell into more or less common categories:

1. Customer invoicing, which was being operated as a number of small individual operations with respect to product, had sufficient similarity to suggest the centralization of the function in the interest of standardization, performance and economies.
2. Accounts receivable could be tied in directly with customer invoicing and, in time, could be developed to do a better coordinated job with the credits and collections function.
3. Accounts payable could be coordinated with the general purchasing function.
4. Payrolls, which were being prepared by completely manual, semi-mechanized, and punched-card methods, had sufficient similarity to suggest combination and standarization of the function.
5. The function of inventories and their control was determined to have two separate and distinct activity conditions:
   a. with respect to sales and customer invoicing.
   b. with respect to planning related to the manufacturing function.
   It was determined that this function must be handled in a manner that would satisfactorily service both these conditions.

The Editor's Choice

THE ECONOMICS OF CAPITAL EXPENDITURE
By K. A. Middleton, Australian Society of Accountants, Sept. 1960.

This study was undertaken as a central research project by Mr. Middleton who is Research Officer of the Society. It is a valuable addition to literature on this important topic. The work discusses various methods of appraisal and includes a set of interest tables for use with the discounted cash flow method. This work is another indication of the world-wide ambition of accountants to familiarize themselves with the use of the more refined tools of business management.

THE TROUBLE WITH PROFIT MAXIMIZATION
By R. N. Anthony, Harvard Business Review, Nov.-Dec. 1960.

This well-known author discards the profit motive as the primary or a desirable force behind the behaviour of business men. He says the concept is too difficult and it is also immoral. "Our system does not condone, let alone encourage, fattening dogs by starving children. Our system is one of which we may be proud. It can be described accurately if the assumption of profit maximization is discarded for the idea of satisfactory return." Mr. Anthony draws a fine point of distinction between these two motives for business decisions. While his argument is well developed, it is likely that the proponents of profit maximization will still have many adherents.

BUDGETS
N.A.A. Bulletin, Nov. 1960.

In this issue of the *Bulletin,* there are six articles that give extensive treatment to this ever-important area of control. The articles deal with the preliminary considerations before deciding on the budget program, a case study on budgeting, the uses of budgets for sales decisions, operating control, and the use of machine accounting in getting a greater variety of tabulations for more control in a budget system.

THE STRANGLEHOLD OF PAPER
By the Earl of Courtown, The Cost Accountant, Nov. 1960.

This article should be provocative to accountants who are interested in costs and to managers in general. The author points out that administration tends to be treated as an end in itself rather than a means to an end. Rigid standardization, apart from being frustrating, tends to be too expensive. There are some operations that should be handled in a common sense manner for, when the purpose and cost are compared, they will be found too expensive to be included in the standard maze of paper requirements.

MEANINGFUL COSTS FOR MANAGEMENT ACTION
by C. A. Bliss, Harvard Business Review, Sept.-Oct. 1960.

This author contends in this well illustrated article that the requirements of financial or custodial accounting and cost accounting for internal control can both be met through the use of incremental cash and profit contribution techniques applied to skillfully designed reports. While he recognizes the worth of direct costing, he rejects some of the arguments its proponents use in their criticism of absorption costing. This is an excellent article.

The Economic SCENE . .

by J. V. Poapst,
School of Business,
University of Toronto.

CONTROLLING THE RATE OF HOUSEBUILDING

WHAT WILL HAPPEN to housebuilding in 1961? This depends upon the volume and terms of loans available under the National Housing Act. Or does it?

In recent years total housebuilding has been very much affected by the level of housebuilding under the National Housing Act. This is indicated by the data in the table. During the period 1954-60 the average of annual changes in NHA-financed starts, however, was 20,000 dwelling, about three times the average for dwellings financed in other ways (cols. 5 and 6). In the last three years changes in NHA lending were particularly important.

DWELLING UNITS STARTED AND COMPLETED AND NET FAMILY FORMATION, CANADA, 1954-1960
(data are in thousands)

Year	Dwelling Units Started						Dwelling Units Completed	Net Family Formation	Dwellings Completed *less* Net Family Formation	
	Total	NHA	Other	Change from Previous Year						
				Total	NHA	Other			Annual	Cumulative
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1954	114	50	64	12	10	2	102	86	16	16
1955	138	65	73	24	15	9	128	74	54	70
1956	127	43	84	—11	—22	11	136	84	52	122
1957	122	47	75	—5	4	—9	117	103	14	136
1958	165	82	83	43	35	8	147	71	76	212
1959	141	62	79	—24	—20	—4	146	67	79	291
1960[1]	105	30	75	—36	—32	—4	126	67	59	350
Average	130	54	76	22	20	7	129	79	50	—

[1]Preliminary estimates. Source of data: CMHC.

It has been the policy of the federal government to destabilize the housebuilding industry. Housebuilders make relatively extensive use of labor and relatively little use of fixed assets. Also, housebuilding materials are largely domestically produced. These conditions have attracted federal governments anxious to minimize fluctuations in activity in the economy as a whole. They have sought to curtail housebuilding when expansion in other parts of the economy was straining total resources of labor and capital and to expand housebuilding when activity elsewhere in the economy was producing insufficient employment and output.

The government influences the volume of NHA-financed housebuilding through its control over the terms and conditions of lending. The maximum loan, loan-to-value ratio, period of amortization, ratio of gross debt service (principal, interest and taxes) to loan applicant's income, and rate of interest can all be altered to stimulate or reduce the demand for new houses. Under certain conditions pressure can be

applied to housebuilding simply by doing nothing to the terms and conditions of lending. When building costs rise, failure to increase appraised values increases down-payment requirements. When long-term interest rates rise, failure to raise the maximum rate under NHA diverts savings to other outlets and reduces the private supply of NHA funds. The government then may or may not fill the gap with public funds.

At one time or another each of the above means has been used with effect upon the rate of housebuilding, the means being chosen with an eye upon the electorate. Attempts to increase housebuilding have led to increases in the maximum loan, loan-to-value ratio, amortization period and gross-debt-service ratio. Attempts to curtail housebuilding have not led to the politically unpopular changes of the opposite direction. Rather it has been found that subtle but powerful restraint can be imposed by not raising the maximum interest rate when other rates rise when general monetary restraint is imposed upon the economy as a whole. By not raising the interest rate, the wrath of the press and the public is avoided and, since savings that would have gone into mortgages are available to other sectors of the economy, they have less of a money shortage to complain about than otherwise would be the case.

During 1960 the NHA interest rate was competitive. Bank lending was virtually nil, however, because the maximum NHA rate (6¾%) exceeded the maximum rate for bank loans (6%). Government lending was much lower than in 1959.

The decline in housebuilding in 1960 followed a previous year of decline. Despite few completions, completed, unoccupied houses and duplexes in 36 major centres were up 28% in October from October, 1959. These conditions are of particular interest in view of changes in lending that were made in 1960 and the further changes proposed. Applicant-income limits in force for CMHC lending early in 1960 were eased in July and lifted in October. The amortization period on CMHC loans was extended from 25 to 30 years in October and it is understood, will be increased to 35 years. Other expected legislative changes are an increase in the maximum loan on houses for owner occupancy from $12,800 to $14,200 and on larger houses to $14,900. The maximum loan-to-value ratio for the first $12,000 of lending value is expected to be increased from 90 to 95%, the remainder remaining at 70%.

Because of these changes, will the rate of new building increase as it has in the past? Conditions in the new house market in 1960 suggest the need for caution. The response to the easing in supply and conditions of NHA loans in 1960 has been disappointing and, as noted above, despite the lower level of completions unsold dwellings have increased in number.

Why has there been insufficient demand to clear the market? One important reason is suggested by the last column in the table. For some time the annual number of dwellings completed has exceeded the net number of families formed. (Net family formation equals marriages plus net migration of married females less deaths to married persons and divorces.) For the period 1954-60 the difference was 350,000. Housing standards have increased substantially in recent years. This makes new demand more readily postponable. Growing unemployment, evident public concern over import competition, and peak levels of mortgage interest rates have encouraged those employed to postpone major purchases. The housing well may be running dry, and the government may have to find a new way to prime the economic pump.

VARIANCES AND THEIR ANALYSES AS APPLIED TO THE MANUFACTURING OPERATION

By E. E. Grubb, Jr.,
Comptroller,
Modern Doors, Inc.,
Lewistown, Pennsylvania.

Assigning the responsibility for variances is the first step in their correction and ultimate improvement in the profit picture. With simple examples, this article reviews procedures for analyzing the amount and causes of manufacturing variances and tracing them back to the department responsible for correction.

WE KNOW that standard costs call for regulation of quantity and rate by the production departments of an industry. We also know that, as long as quantity of raw materials and labor per unit of production is properly established and remains constant, and as long as spoilage or waste does not differ materially from allowances for these factors, variation will be at a minimum or non-existent.

These variations between actual and standard costs—or variances, as they are more commonly called—become significant as the difference between them and standard costs increases.

The recording and study of these variances contribute much to the efficient management of industry but, to be of value, there must be some knowledge of their use in placing responsibility. We must first understand the reasons for the variances and the ways of analyzing them to learn their effect upon costs and production.

COMPARING ACTUAL AND STANDARD

Variances are due mainly to deviations from standard in the quantity of materials bought or consumed in a manufacturing process, or by deviations from the standard rate of cost per unit, or by a combination of the two. Other causes can be specification changes, changes in proportion of waste or spoilage, or changes in method of operation. To illustrate this fundamental, let us examine the following cases, typifying results of a sample comparison of actual quantities and costs with standard in a manufacturing process:

(1) *Variance in Quantity—*

Actual quantity used	1485 pcs. @ 17¢ =	$252.45
Standard quality	1350 pcs. @ 17¢ =	229.50
Variance	135 pcs.	$ 22.95

After graduating from Thompson Business College, Harrisburg, Pa., Mr. Grubb attended Wharton School of Accounting and Finance, University of Pennsylvania. Prior to joining Modern Doors, Inc., as Comptroller, he was Secretary-Treasurer of the Bankers' Mutual Fire Insurance Company in Harrisburg. Mr. Grubb is a member of the Harrisburg Chapter of the National Association of Accountants.

(2) *Variance in Rate—*

Actual cost	1350 pcs. @ 19¢ =	$256.50
Standard rate	1350 pcs. @ 17¢ =	229.50
	–0– pcs., cost	$ 27.00

(3) *Variance in Quantity and Rate—*

Actual quantity and cost	1485 pcs. @ 19¢ =	$282.15
Standard quantity and rate	1350 pcs. @ 17¢ =	229.50
	135 pcs., cost	$ 52.65

In cases (1) and (2), the reason for variances is found by direct comparison. In case (3), however, more than one factor contributes to the variance and analysis is needed to learn how much of the variance is due to quantity and how much to rate.

DETERMINING THE AMOUNT OF VARIANCE

Let us assume that in case (3) the variances in quantity were due to:

Production in excess of standard	95 pcs.
Spoilage in excess of standard	12 pcs.
Changes in job specifications	28 pcs.
Total quantity variance	135 pcs.

From this point, we set about determining what factors or individuals were responsible for the deviations from standard. In ascertaining these reasons for variance, it is possible to place responsibility and determine what must be done to eliminate the cause.

Three basic rules are given for determining the amount of variance attributable to quantity and cost:

(1) When quantity consumed differs from the standard quantity and the actual cost per unit is the same as the standard rate, the amount of variance is due to the difference in consumption. In case (1) given above, the variance of $22.95 is caused by the use of 135 pieces more than standard at the standard cost per unit.

(2) When actual cost per unit differs from the standard rate and the quantity consumed is the same as standard, the amount of variance is caused by the difference in the cost rates per unit. In case (2), the variance of $27.00 is caused by consumption of the standard number of pieces at a cost of $.02 more per unit than standard.

(3) When both quantity consumed and cost per unit differ from standard, the amount of variance results from a combination of the variance due to quantity and the variance due to difference in cost per unit.

Our next act is to find the amount of variance caused by each factor. To do so, we interpolate and come up with:

Actual quantity (1485) × difference in rate (.02) =	$29.70
Quantity difference (135) × standard rate (.17) =	22.95
Sum of variances =	$52.65

In actual practice, it will be found that (a) cases occur in which both factors of quantity and cost will be greater than standard, producing a variance in excess of standard; (b) cases where both factors may be less than standard, producing a variance below standard; and (c) cases where one factor may be more and the other less, thus tending to offset one another.

TRACING THE CAUSE OF VARIANCE

To find the cause and trace responsibility for variances, a further analysis is needed. Causes may be due to:

(1) Changes in specifications
(2) Spoilage or waste differences from standard allowance
(3) Difference in operation from standard
(4) Acts by other departments.

Changes in specifications tend to destroy the effectiveness of standard costs, since we no longer have a basis for comparison. When this happens, new standards should be established in line with the new specifications.

A reasonable allowance is made for spoilage or waste and this allowance should include material and a proportion of labor and expense cost. The sources from which information for this allowance may be obtained are stores requisitions, time reports, spoilage and waste reports, and cost sheets. Deviations from the standard allowance are studied to ascertain why any excess spoilage occurred and who was responsible.

When differences in operation occur, this results in production of more units or fewer units than standard. Obviously, if the product is one that may be inventoried for later sale, higher than standard quantity may be produced and a lower per unit cost will result. This is possible since that part of total cost represented by fixed or constant costs will be absorbed by a greater number of units.

Responsibility for variances may begin with the purchasing department and continue through the final stages of manufacture. Purchase of materials of inferior quality could cause more waste or spoilage—or could cause a need for more than the normal amount and result in increased quantity. The employing department, by hiring inefficient workers or by hiring at pay scales over normal, could cause increase in cost per unit. Improper use of material and labor in production would have a similar effect.

The over-all ultimate purpose of variance analysis is to make the industrial processes as efficient as possible and make a profit—or a greater profit from the enterprise.

The sales department plays an important part in maintaining standards because, should sales decline, production must cease or be curtailed and, with production at less than standard capacity, cost per unit rises. If the product can be inventoried without risk of loss, production may be continued until inventories are at maximum levels to accomodate future orders. Here is where effective inventory control contributes to preservation of standards.

ASSIGNING INDIVIDUAL RESPONSIBILITY

In summarizing, it is possible to take an analysis and proceed from the cause to the department or individual responsible.

As a practical application of the technique of developing variances and disclosing the cause, reference is made to the chart (Exhibit I) to show in the broader sense

STANDARD COSTS AND ACTUAL COSTS COMPARED AND VARIANCES THEREFROM

DIRECT MATERIAL	STANDARD COST			ACTUAL COST			QUANTITY MORE THAN STANDARD	COST MORE THAN STANDARD
Rods and Hinge Plates.....	1200 lbs. @ .51	$612.00		1250 lbs. @ .50	$625.00		50 sq. ft.	$13.00
Fabric.....	900 sq. ft. @ .40	360.00		950 sq. ft. @ .38	361.00		50 sq. ft.	1.00
Plastic Coating.....	150 gal. @ 1.00	150.00		175 gal. @ 1.00	175.00		25 gal.	25.00
			$1122.00			$1161.00		$39.00
DIRECT LABOR								
Fabric Coating & Drying.....	72 hrs. @ 1.20	$ 86.40		80 hrs. @ $1.08	86.40		8 hrs.	$ 0.00
Cutting & Seaming.....	40 hrs. @ 1.15	46.00		40 hrs. @ 1.25	50.00		-0-	4.00
Frame Welding & Assembly..	108 hrs. @ 1.25	135.00		114 hrs. @ 1.25	142.50		6 hrs.	7.50
			$267.40			$278.90		$11.50
APPLIED FACTORY BURDEN								
Coating Dept.....	72 hrs. @ .80	$57.60		80 hrs. @ .80	$64.00		8 hrs.	$ 6.40
Cutting & Seaming Dept.....	40 hrs. @ .61	24.40		40 hrs. @ .61	24.40		-0-	0.00
Welding & Assembly.....	108 hrs. @ .70	75.60		114 hrs. @ .70	79.80		6 hrs.	4.20
			157.60			168.20		10.60
Manufacturing Cost.....			$1547.00			$1608.10		$61.10

EXHIBIT I

how responsibilities may be placed.

Comparison of the total costs shows that the actual cost exceeded standard by $61.10; comparison of their elements shows that the actual cost of direct material exceeded standard by $39.00; direct labor cost exceeded standard by $11.50; and applied factory burden exceeded standard by $10.66.

From the analysis it will be observed that most of the difference in material cost was in the plastic coating for the fabric; in labor cost and applied factory burden it is in frame welding and assembly.

To see how the analysis proceeds:

1. Assume that the purchasing department made a purchase of metal stampings for use in producing rods and hinge plates at low cost but the metal was inferior in quality, necessitating the use of a larger amount. The excess cost of $13.00 is chargeable to the purchasing agent.

2. Assume that the purchasing department bought fabric at .02 per square foot less than standard, but that production department errors caused an additional 50 square feet to be used. We would then credit the purchasing department with the saving on the entire quantity consumed (950 square feet at .02), or $19.00, since the extra amount used was not its responsibility. The production department, on the other hand, is chargeable for the cost of the excess quantity used (50 square feet at the standard rate of .40), or $20.00. Production is not entitled to recognition for the saving on the purchase itself.

3. Assume that the excess quantity of plastic coating was used because of inefficiency in coating and drying. That department, then, is chargeable with the excess cost of $25.00.

4. Assume that, by hiring an inexperienced helper at $1.08 per hour, the employment department caused the excess time in coating and drying. No difference in labor cost resulted, but the responsibility for the excess amount of applied factory burden, or $6.40, is that of the employment department.

5. Assume that the production department assigned a man in the cutting and seaming department who was paid more than the standard rate. It could not be shown that quality or quantity of production improved as a result, therefore, the difference of $4.00 is chargeable to that department.

6. Assume that, owing to inefficiency in welding and assembly, six hours more labor were consumed than standard. That department, then, is charged with the extra labor cost, or $7.50, and with the extra applied factory burden of $4.20, for a total of $11.70.

STATEMENT OF VARIANCE RESPONSIBILITY

Based upon the above assumptions, a statement of responsibility for variances from standard can be prepared as follows:

Department	Responsibility for Added Cost	Reduced Cost Credit for
Purchasing	$13.00	$19.00
Production	24.00	
Employment	6.40	
Frame Welding & Assembly	36.70	
Totals	$80.10	$19.00

Net chargeable to all departments, representing excess of actual cost over standard cost, is $61.10 for this order.

The foregoing is an elementary case involving a comparatively small order but demonstrating the conclusions that can be reached through comparative analysis.

If a statement of responsibility is prepared for each order or department and a summary of the statements is compiled periodically, the total difference between standard and actual costs will be available to point out the amount and degree of responsibility by departments for the variances. The only way standards can be maintained is by bringing constantly to the attention of each executive the fact that he is responsible for variances under his control.

At this point the job is only partly finished. Successful study of the variances will ultimately lead to correction of their causes or adjustment of the standard.

Deciding upon the course of action must follow consultations with the heads of the departments involved, all with the mutual purpose of making their operation more efficient or arriving at a more realistic standard for the future.

For further reading

VARIANCE REPORTING FOR MANAGERIAL CONTROL, by Donald J. Ross, *Cost and Management*, Oct. 1960.

THE DIMENSIONAL PRINCIPLE IN THE ANALYSIS OF VARIANCE, by Daniel Lipsky, *N.A.A. Bulletin*, Sept. 1960.

A PROPOSAL FOR DETERMINING THE SIGNIFICANCE OF VARIATIONS FROM STANDARD, by A. W. Patrick, *The Accounting Review*, Oct. 1957.

FACTORS AFFECTING INTELLIGENT USE OF VARIANCES, by J. V. van Pelt, *N.A.C.A. Bulletin*, Mar. 1955.

TOPICAL comments

LOOKING AHEAD

Tomorrow's man may not be wealthier, but he should be healthier if some predictions that are not entirely fanciful ever become reality. Among these are a "health bath" of sound waves that not only cleanses the skin but also rids the body of germs, a clog-proof plastic tube to replace faulty coronary arteries, and a pill that lets you get more rest from four hours sleep than you now get from eight. With such aids as electronic selection of careers for school graduates, he need not be wise, merely well-informed, which can be arranged through a two-ounce telephone that fastens to the belt. *(Precis.)*

Single-family house starts in 1961 could amount to $749.1 million in total construction value; $78 million in major furnishings; and 280.8 million man-hours in jobs. The average house costs $2,361 for land; $12,044 for wages, materials and profit; $1,500 for major furnishings; and 4,400 man-hours on and off the site. *(Fin. Post, Dec. 3/60.)*

The demand for engineers and scientists is growing, according to a composite index based on classified advertising in key U.S. newspapers and journals. By the end of October, the demand index has risen to 116.2, almost 20% above the August low of 97.6. *(Deutsch & Shea Index.)*

Population explosion by 1980 could push Indonesian population ahead of Japan's to make it the fifth most populous nation after Communist China, India, the Soviet Union and the U.S., a recent United Nations survey shows. By 1975, Japan's population should reach 102,729,000 while Indonesian population, already the largest in South-East Asia, should reach 138,500,000 and possibly 159,700,000 by 1980. *(Bus. Rev.)*

OF GENERAL INTEREST

How much does a sales call cost? A composite figure for 300 industrial companies puts it at $18.92 per call. A sliding scale approach based on the salesman's earnings measured it at $13.13 for a $12,000 per year man ranging to $26.26 for a $24,000 man. One company which includes advertising, promotion, field office and headquarters expense in its reckoning, came up with an average cost per call of $69. *(Dun's Rev., Nov./60.)*

The average weekly wage in Canadian manufacturing industry has increased by more than 21% in the last five years—from $59.35 in mid-1955 to $72.03 in 1960. *(Ind., Nov. /60.)*

Canada's best customers abroad in the first nine months of 1960 were: (in millions of dollars) U.S.—$2,224.9, U.K.—$670.9, Japan—$128.7, Germany, Federal

Republic—$112.9, Australia—$72.5, Norway—$54.1, France—$53.3, Belgium and Luxembourg—$47.0, Netherlands—$43.4, Union of South Africa—$40.2.

Her leading exports were: (in millions of dollars) Newsprint paper—$553.3, Wheat—$285.8, Lumber and timber—$264.6, Wood pulp—$242.3, Uranium ores and concentrates—$203.4, Nickel—$197.4, Aluminum and products—$196.6, Copper and products—$172.7, Iron ore—$127.9, Fish and fishery products—$98.5. *(DBS, Nov. 10/60.)*

Top management goals vary with the size, unionization, and composition of the work force of the business, university researchers found in a survey of managers in a cross-section of industry. Profits, public service, in the form of good products, and employee welfare were the company goals most frequently mentioned. Public service was mentioned oftener by the managers of large business than of small business; and employee welfare was mentioned primarily by managers of unionized companies. The more white-collar employees in a company, the more often the manager mentioned growth rather than profits. "Good products" and "staying ahead of competition" were cited most often as goals in growing concerns, while internal affairs were the prime interest of managers of declining companies. *(Personnel, Nov.-Dec./60.)*

ON THE PERSONAL SIDE

Infectious hepatitis, a virus-caused liver ailment, is becoming a serious health hazard. Symptoms are headache, fever, fatigue, nausea, lack of appetite, mental depression, developing two to six weeks after the virus is transmitted. Best preventative is to avoid getting rundown. If you've been exposed to someone with the ailment, see your doctor about a gamma globulin inoculation. *(Bus. Week, Nov. 19/60.)*

The portrait of the new factory worker as sketched by Britain's Dr. F. Zweig in his study of 675 workers in five large industrial firms is a rather phlegmatic one. In summary, "he wants little things instead of big things. He wants them for himself rather than for society at large. Old calls, old slogans, old loyalties often leave him cold. The idea of the working class as the foremost in the struggle for progress and social justice is fading from his mind." *(The Manager, Nov. /60.)*

When you tote up your Christmas bills this year, be assured you have succumbed to a shopping impulse almost as old as man. Shopping lists, bills and receipts 5,000 years old have been found in Egyptian tombs, and the world's first stores—gaily-decorated open-stall specialty shops in the public square—were doing a land-office business by 3,000 B.C. "The merchants of the world are waxed rich," says the Bible. *(Precis.)*

The winter cruise will lure some 6,300 Canadians to warmer waters this year for a total estimated tab of between $18 and $20 million.

More than two-thirds of all cruises are comparatively brief ones to the Caribbean ranging from 10 to 20 days and costing from $750 up. Fares quoted for a world cruise of 95 days range from $2,875 per person to $5,600, but may ultimately cost between $6,500 and $10,000 when shore expenses, purchases, tips at a minimum of $20 per week, and other expenses are added. Other popular cruises are to the Mediterranean (fare range from North America: $540-$1,650) and the Pacific (min. fare from Vancouver $440). *(Sat. Night, Nov. 26/60.)*

A GROWING YOUNGSTER and idb

Some youngsters are always growing out of their clothes and needing new ones. This was the sort of problem facing the X-Y Company. The Company's growth was phenomenal. New developments in the manufacture and character of its products (foil and transparent paper) had extended their use into many new fields.

The X-Y Company's growth demanded more machinery and space; new diversity in wrappers demanded new equipment. It had been doing extremely well, but it had been growing out of its financial clothing.

When it first approached Industrial Development Bank for financial assistance it already owned a fully paid-for plant. Annual sales were over the million dollar mark, and heading higher.

The growth in market demand was encouraging, but in the endeavour to keep up with it, the Company had been unable to set aside funds for adequate expansion. Its assets were substantial, but normal commercial financing was not available, and the Company was not in a position to issue further capital stock successfully. I.D.B. stepped in to provide the needed financing, and the productivity of the new machinery exceeded the highest expectations.

But the youngster hadn't stopped growing, and the same situation arose a couple of years later. Again the Company needed new machinery to increase production, and again I.D.B. provided term financing for this purpose. The mushrooming sales chart took another surge upward.

The X-Y Company has benefitted from having alert, courageous management and from having the right goods to sell at the right time, and when opportunity knocked, I.D.B. helped the Company open the door.

This is one of the more than 3,500 enterprises helped by I.D.B. I.D.B. was established to assist industrial enterprises whose term financial needs cannot be met from normal sources.

If you have such a problem, you are invited to get in touch with any I.D.B. office, or consult your auditor, lawyer or banker.

INDUSTRIAL DEVELOPMENT BANK

Regional Offices: Vancouver, Edmonton, Calgary, Regina, Winnipeg, Sudbury, London, Toronto, Ottawa, Montreal, Quebec City, Saint John, Halifax.

—*I.D.B. can consider proposals for financial assistance in these activities:

manufacturing, processing, assembling, installing, overhauling, reconditioning, altering, repairing, cleaning, packaging, transporting or warehousing of goods; logging, operating a mine or quarry, drilling construction, engineering, technical surveys or scientific research, generating or distributing electricity or operating a commercial air service, or the transportation of persons, or supplying premises, machinery or equipment under lease to any business mentioned above.

BUSINESS INTERRUPTION INSURANCE *

By J. N. Fenton,
Partner,
Long, Fenton & Swing,
Hamilton, Ontario.

Business interruption insurance is a field in which the accountant inevitably becomes involved, and his role in writing and settling loss claims is discussed in this thesis. Also outlined is the use of business interruption insurance in business and industry today and the various types of coverage available under Canadian insurance practice.

WHEN a manufacturing plant or mercantile establishment is destroyed or damaged by fire or similar disaster, the loss is by no means confined to the physical value of buildings, equipment and inventories destroyed. On the contrary, the interruption of sales or production, caused by the fire will usually result in the loss of profits and prevent recovery of operating expenses which necessarily continue after the fire. It is not unusual for this loss to exceed the actual physical damage incurred. Statistics indicate that a considerable percentage of small businesses never resume operations after a serious fire interrupts business and the flow of revenue.

To protect themselves against such losses, most manufacturing concerns and many mercantile establishments now carry business interruption insurance. This type of insurance is also commonly known as use and occupancy insurance. This insurance, when properly written, should place the insured in the same financial position as he would have been if no fire had occurred, by reimbursing him for the profits lost and expenses continuing after the fire. In actual practice, there will usually be some loss of profits or expenses which is not covered. However, when the policy is properly written and the correct amount of insurance carried, a substantial part of the loss can be recovered if the claim is properly prepared. It may be said that business interruption insurance, in any of its forms, insures the money that a business makes by keeping regular earnings flowing after the business has been partially or wholly disabled by fire or similar disaster.

ORIGIN OF THE COVERAGE

As early as 1842 in the United States and 1847 in Great Britain, it was established by the courts that profits were insurable. It was held, however, that profits were not recoverable under a policy of insurance that did not specifically insure them as such.

Since that time, insurance policies covering loss of profit have been written in various forms, both in Europe and on this continent. The original use and occupancy insurance policies were developed in the United States in the 1870's. These policies were simple in form and the recovery thereunder was usually based on a fixed per diem sum for the period during which the business could not operate.

At the same time in England, a form of profits insurance was being developed based on the relationship that the reduction in "turnover" following a fire bears to

*Condensation of a thesis submitted for R.I.A. qualification.

Mr. Fenton was born in England and educated in Hamilton public and high schools. He articled with Long & Marshall, Chartered Accountants, receiving his C.A. in 1947 and becoming a partner in the firm, now Long, Fenton & Swing. He received his R.I.A. in May of last year. He is Past President of Kiwanis Club of Hamilton Inc. and Council of Associated Service Clubs of Hamilton.

"turnover" previous to the fire. This type of insurance was perfected in the late nineteenth century and is presently written under standardized forms in Canada.

Out of these developments, the writing of business interruption insurance became more common in the United States and Canada. Standardized forms were developed and are used in both countries with the exception of the English "profits" form which is not used in the United States.

THE ACCOUNTANT'S ROLE

Because the calculations of insurable value and claims for loss under business interruption insurance policies are essentially projections of net earnings and expenses, the accountant inevitably is involved in the preparation of the necessary figures. In the case of large organizations, the comptroller is usually responsible for this. However, in the case of smaller concerns, the firm's auditor or public accountant is often instructed to assemble the necessary figures.

The accountant's first concern is to ascertain that the amount of insurance carried is sufficient. He should give consideration to the type of policy form under which the risk is written and to the co-insurance rate specified in the policy. It is the usual practice of insurance underwriters to consult with the insured's accountant in determining the amount of insurance to be written. Therefore, it is the responsibility of the accountant to make sure that the amount of insurance is adequate.

If the insured should incur a loss under a business interruption insurance policy, the responsibility for preparing a claim, to be submitted to the insurance company's adjuster, again becomes that of the accountant. Obviously, he is the person most familiar with the details of the company's profit and loss statement and it is logical that he should prepare the necessary claim.

As the calculation of the claim is primarily an accounting procedure, in actual practice, the insurance company's adjuster will usually engage the services of a public accountant to assist him in the negotiation of the settlement.

The accountant in industry must be aware that business interruption insurance is carried for the sole purpose of protecting earnings. The manner in which earnings are recorded, in the light of the type of coverage carried, will largely determine the ease and speed with which a claim for loss may be calculated and settled.

TYPES OF COVERAGE AVAILABLE

Business interruption insurance is now written almost entirely on standardized forms which have been perfected during the present century. These forms are divided into three distinct types which are:

1. Gross earnings policy form
2. Two-item contribution policy form
3. Gross profits policy form

Certain mutual insurance companies use forms of their own development which, with minor exceptions, follow the standardized forms referred to above.

GROSS EARNINGS POLICY FORM

This type of policy is also sometimes called the single item contribution form. It derives its names from the fact that, in one item of coverage, the insured is indemnified against loss. The amount of loss is measured by the reduction in gross earnings, less those charges and expenses which do not necessarily continue after the disaster which caused the interruption of business.

The distinguishing feature of this form is its simplicity, in that only gross earnings are insured. It dispenses with the necessity for providing specific insurance on ordinary payroll and heat, light and power, which characterizes the two-item form.

The gross earnings policy form is particularly effective for a business in which ordinary unskilled labor is only a small proportion of operating costs. It is the most common type of coverage found in smaller mercantile establishments but it is not as suitable for manufacturing industries as the types of policies described below. This policy contains a co-insurance clause.

TWO-ITEM CONTRIBUTION POLICY FORM

This form of policy is a contract divided into two separate and distinct items. Item I of the policy indemnifies against the loss of net profit and expenses which necessarily continue after the fire or similar disaster. Ordinary payroll and the non-continuing cost of heat, light and power are, however, specifically excluded from coverage under Item I. Item II of the policy covers the continuing cost of ordinary payroll, at the option of the insured, for a specified number of days, not less than 90. The coverage under Item II is entirely optional and the insured is not obliged to cover ordinary payroll as he is in the case of the gross earnings policy form.

Owing to the fact that this policy form is designed specifically to either include or exclude ordinary labor at the insured's option, it is particularly effective in the manufacturing industries where ordinary labor forms a considerable part of costs. The reader will note that if insurance coverage on ordinary payroll is desired, it may be obtained for a period as short as 90 days.

As the name of the policy implies, this contract also contains a contribution or co-insurance clause which will be described further on.

GROSS PROFIT POLICY FORM

This policy form derives its name from the fact that it covers "gross profits." "Gross profits" as defined in this contract of insurance are not, however, the same as they would ordinarily be defined by the accountant. In arriving at gross profit, the accountant deducts, from the dollar value of sales, the cost of goods sold, including the cost contained therein for materials, labor and manufacturing overhead. However, in arriving at "gross profits" as defined in this policy form, the only cost specifically excluded *by the policy* is the cost of material. In the event of a loss under this type of policy, it is therefore possible for the insured to recover ordinary labor and manufacturing overhead costs as a part of defined "gross profits."

The definition of "gross profits" in this form of policy is written in one or the other of two ways.

"Gross profits" may be defined as the sum of net profit plus specified expenses which the insured elects to insure and which are written in detail into the wording of the policy. The cost of raw materials or merchandise purchased for resale, however, may not be insured. This is the original form of the policy and it remains the form most commonly written because insurance agents are quite familiar with it.

The secondary way of writing the gross profits policy form is comparatively new. It defines "gross profits" as the value of sales (or production) less the cost of raw materials, and merchandise purchased for resale plus those other expenses which the insured does not want covered. These excluded expenses are written specifically in detail in the wording of the policy.

The obvious advantage of the second, more recent, form of policy wording over the first, is that under the second it is very unlikely that any expenses, which should be insured, will be omitted by oversight. On the other hand, under the newer form it is easier to cover items of expense which need not be covered simply because the insured neglects to specify that they be omitted, This obviously adds unnecessarily to the premium cost.

OTHER DIFFERENCES BETWEEN THE THREE POLICY FORMS

In addition to the differences described above between the different forms, there are two other basic differences which affect the decision as to which policy form to use when underwriting a risk.

The first of these differences has to do with the length of time for which the insurance is effective after the date of the loss.

The gross earnings policy form and the two-item policy form both indemnify for the loss of net profit plus continuing expenses (subject to the basic differences in the two policies as previously discussed) for the period of time which would be necessary, with the exercise of due diligence, to replace or repair building and equipment of the insured and replace the merchandise (or raw stock in the case of a manufacturer) damaged or destroyed by the fire. It may be seen therefore that under these two policy forms, the period of indemnity ends as soon as sufficient time has elapsed for the insured to replace his physical assets and be in a position to resume operation. Under the terms of the policy, it is not necessary for the repairs, etc., to take place; the necessary amount of time may be determined by agreement or by expert consultants.

The gross profits policy form, in contrast to the other two forms, indemnifies the insured for the loss of gross profit, as defined by the policy, for the period of time expired until the volume of production or sales of the insured is back to normal, but for a period not exceeding 12 months from the date of the fire. Under this policy form therefore, the period of indemnity could extend considerably beyond the period of time necessary to replace physical assets.

The second difference has to do with the co-insurance requirements which are written into the policies. All business interruption insurance policies contain a clause which states that insurance of at least a stipulated percentage of insurable value must be carried or the insured becomes a co-insurer under the terms of the policy. The determination of insurable value is dealt with in the next section. The difference which the writer wishes to point out here is that each type of policy requires a different percentage of coverage of insurable value.

The gross earnings policy form is very flexible, and the insured can elect to have the co-insurance rate set at 50%, 60%, 70% or 80%. The rate which he chooses is then written into the policy.

The two-item contribution policy form may contain either an 80% or 100% co-insurance clause. In Canada, however, the 80% co-insurance clause is almost universally written.

The gross profits policy form always contains a 100% co-insurance clause.

CALCULATING THE AMOUNT OF INSURANCE REQUIRED

Calculation of the amount of insurance required is effected by the use of work sheets which set out the items affecting insurable values (Exhibits A, B and C).

The work sheet required for use with the gross earnings policy form (Exhibit A) is a simple form because there are not exclusions from expenses. As is the case in writing business interruption insurance under any of the forms, it must be kept in mind that the insurance will be in effect for the following year and that the trend up or down of business volume must be observed when calculating insurance requirements.

Exhibit B outlines the work sheet used to establish the amount of insurance required under the two-item policy form. As previously discussed, insurance is written under this form of policy, on two separate items. The first item insured is the sum of the net profit plus necessary continuing expenses which exclude heat, light and power and ordinary labor. It may be provided in the policy that only the cost of heat, light and power, which does not continue in the event of a shut down, is excluded. In this case, only the non-continuing portion of this expense is deducted as Item No. 2(a) on the work sheet. Ordinary labor, excluded under Item No. 1 (No. 2(b)) and covered under Item No. 2, refers to the payroll of all non-key employees (usually hourly-rated) that the insured desires to retain and would retain if the business suspension is of comparatively short duration, but who are not of sufficient importance to the business to justify payment of their wages for a prolonged suspension of business. They are also employees who merit payment of wages for a reasonable period to permit them to locate temporary jobs for the duration of the suspension of business.

The work sheet used in connection with the writing of insurance under the gross

EXHIBIT A

WORK SHEET FOR THE GROSS EARNINGS POLICY FORM

1.	Annual net sales—(In the case of a manufacturing plant, the net sales value of annual production)		$.....
2.	Cost of merchandise sold—(In the case of a manufacturing plant, the cost of raw stock and supplies used during the year in production of finished goods)	$.....	
3.	Sales taxes if included in No. 1	$.....	
4.	Bad accounts if included in No. 1	$.....	
5.	Sum of Nos. 2, 3 and 4		$.....
6.	Subtract No. 5 from No. 1		$.....
7.	Add other receipts of business —		
	(a) Cash discounts unless deducted under No. 2		$.....
	(b) Income from departments leased to others		$.....
	(c) Other revenues — (if any)		$.....
8.	Gross earnings or insurable value—(Total of No. 6 and No. 7 (a), (b) and (c)		$.....
9.	Contribution requirement—(50%, 60%, 70% or 80% co-insurance)		
10.	Insurance Required — (Gross earnings — No. 8 multiplied by the co-insurance rate—No. 9)		$.....

EXHIBIT B

WORK SHEET FOR THE TWO-ITEM POLICY FORM

Item No. 1

1.	Gross earnings—Calculated in the same manner as No. 9 on the work sheet for gross earnings policy form — (Exhibit A)		$.....
2.	Deductions—		
	(a) Cost of heat, light and power	$.....	
	(b) Ordinary pay roll	$.....	
3.	Total of 2(a) and 2(b)		$.....
4.	Amount of insurance if 100% co-insurance clause applies — (insurable value)		$.....
5.	Take 80% of Item 4 if 80% co-insurance clause applies — (usually applicable in Canada)		

Item No. 2

To determine the amount of coverage for ordinary pay roll.

1.	Annual ordinary pay roll	$.....
2.	Decrease No. 1 on pro-rata basis for the number of days of coverage required under this item (Not less than 90 days)	$.....
3.	Increase No. 2 to equal an equal number of consecutive days of season when the pay roll is greatest	$.....
4.	Enter 80% of No. 3 to meet 80% co-insurance requirements and determine amount of insurance required	$.....

profits policy form is outlined as Exhibit C. As shown by the work sheet, the amount of insurance required under this form of policy is the amount produced by adding to net profit the sum of the specified insured standing charges plus a provision of 5% of these specified charges to cover miscellaneous continuing expenses not specified. This form of policy contains a 100% co-insurance clause and therefore insurance carried should not amount to less than the total insurable value in order to avoid co-insurance penalty in the event of a loss under the policy.

CALCULATING THE LOSS

Regardless of the policy form on which the risk is written, the calculation of the amount of recovery in the event of a loss is determined in four distinct steps as follows:

1. Calculate the loss of sales in dollars
2. Determine what percentage of the sales dollar has been actually lost
3. Determine the amount of expenses incurred to reduce the loss
4. Apply the co-insurance clause.

Items No. 1 and No. 2 above will be dealt with here. Items No. 3 and No. 4 will be explained further on.

EXHIBIT C

WORK SHEET FOR THE GROSS PROFITS POLICY FORM

1.	Annual net profit		$.....
2.	Insured standing charges —		
	(a) Rent	$.....	
	(b) Municipal taxes	$.....	
	(c) Insurance	$.....	
	(d) Stand down charges—heat, light and power	$.....	
	(e) Salaries of executives and essential personnel	$.....	
	(f) Wages of foreman and skilled employees	$.....	
	(g) Auditing and legal retainer fees	$.....	
	(h) Depreciation of fixed assets	$.....	
	(i) Advertising under contract	$.....	
	(j) Postage and telephone	$.....	
	(k) Interest and mortgage, loans, bonds, etc.	$.....	
	(l) Miscellaneous expenses—(5% of the total of 2(a) to 2(k)	$.....	
3.	Sum of 2(a) to 2(l)		$.....
4.	Amount of insurance required or insurable value —(sum of No. 1 and No. 3)		$.....

NOTE: In writing insurance under this policy form, insurance standing charges are specified by the insured. Items No. 2(a) to No. 2(k) above are some of the expenses usually specified, but are not represented as all of such charges.

CALCULATING LOSS OF SALES

The first procedure in the calculation of any claim for loss under a business interruption insurance policy is to establish the dollar value of sales or production which, under the limits of the policy, can be said to have been lost owing to the interruption of business.

The period of time involved will be agreed upon by the insurance company's adjuster and the insured. In this connection it must be remembered that, under the gross earnings policy form and the two-item contribution form, this period of time cannot exceed the time necessary, with the exercise of due diligence, to repair or replace the physical assets of the assured. The gross profits form does not contain this limitation.

From the records of the insured, the sales (or production) are determined for the period in the previous year which corresponds to the period of interruption. This figure is then adjusted to reflect any trend of increase or decrease in sales or production as illustrated in Exhibit D. In some cases, it will be found that an isolated set of circumstances, affecting the sales of the period of interruption or the corresponding period in the previous year, has a material effect on the calculation of loss of sales. The effect of such circumstances must, of course, be taken into account in the calculation.

DETERMINING THE PERCENTAGE OF SALES DOLLAR LOST

This calculation is essential in determining the amount of the loss as illustrated by the following example.

EXHIBIT D

CALCULATION OF LOSS OF SALES (OR PRODUCTION)

Period of interruption — March 1st, 1956 to March 31st, 1956.	
Sales (or production) —	
March 1st, 1955 to March 31st, 1955	$ 100,000
Sales (or production) —	
March 1st, 1954 to February 28th, 1955	1,200,000
Sales (or Production) —	
March 1st, 1955 to February 28th, 1956	1,322,000
Increase — 11% of $1,200,000	$ 132,000
Calculated loss of sales (or production) for the period —	
March 1st, 1956 to March 31st, 1956 —	
Sales for the same period of the previous year	100,000
Add: anticipated increase — 11%	11,000
	$ 111,000

If we have determined that, out of every dollar of sales lost, say 40 cents represents actual loss to the insured, then the loss amounts to 40 cents multiplied by the calculated loss of sales. If the loss of sales amounts to $100,000, then the business interruption loss would be 100,000 times 40 cents, or $40,000.

Obviously, in actual practice, although the principle remains the same, the calculation is different for each type of policy form.

It will therefore be necessary to discuss the calculation under the three types of policy forms, to establish the percentage referred to above. The determination of this percentage is best illustrated by work sheets which outline the entire calculation of the loss. These work sheets are illustrated on Exhibits E, F and G.

CALCULATING LOSS UNDER THE GROSS EARNINGS POLICY FORM

The method of calculating a business interruption loss under the gross earnings policy form is illustrated on Exhibit E. The calculation involves three basic steps.

1. Determine dollar value of sales or production lost
2. Calculate gross earnings lost on loss of sales
3. Deduct from gross earnings lost the total of all expenses which did not continue during the period of interruption or which are not insurable.

In determining which expenses do, or do not continue, the main consideration is the length of the period of interruption. For instance, if the interruption is a short one, say one or two days, it is likely that all factory employees will be retained and their wages be recoverable under the policy. If, however, the period of interruption should extend for a considerable length of time, the insured would not be justified in retaining ordinary employees on the pay roll and attempting to recover their wages from the insurance company. There is no hard and fast rule to determine whether or not an expense should be considered a continuing expense. Each case must be decided by the particular circumstances which affect the loss.

CALCULATING LOSS UNDER THE TWO-ITEM CONTRIBUTION POLICY FORM

Exhibit F shows the method of calculating the loss under the two-item policy

EXHIBIT E

WORK SHEET FOR THE CALCULATION OF BUSINESS INTERRUPTION LOSS UNDER THE GROSS EARNINGS POLICY FORM

1.	Annual net sales (or production) per last audited financial statement		$.....
2.	Annual gross earnings determined from this annual statement—(See Exhibit A for method of calculation of gross earnings)		$.....
3.	Percentage of gross earnings (2) to sales (1)		..... %
4.	Loss of sales (or production) during period of interruption—(See Exhibit D)	$.....	
5.	Loss of gross earnings—Percentage (as in 3 Above) of 4		$.....
6.	*Deduct* — non-continuing expenses for period of interruption		
	(a) Depreciation of fixed assets damaged or destroyed by fire	$.....	
	(b) Operating supplies	$.....	
	(c) Wages of non-essential employees not retained	$.....	
	(d) Rent (when this expense ceases in case of fire)	$.....	
	(e) Advertising not under contract	$.....	
	(f) Legal expense other than retaining fees	$.....	
	(g) Business interruption insurance premium	$.....	
7.	Sum of items included under No. 6		$.....
8.	Amount of loss — Deduct No. 7 from No. 5		$.....

form. This calculation is similar to that for the gross earnings policy form except for the specific treatment under the policy of ordinary pay roll and the cost of heat, light and power.

CALCULATING LOSS UNDER THE GROSS PROFITS POLICY FORM

In determining the amount of the loss under a gross profits policy form, the loss is essentially the sum of the net profit lost during the period of interruption and the insured standing charges, applicable to that period, which necessarily continue. The insured standing charges, as previously outlined, are those expenses specified in the policy plus miscellaneous continuing expenses which may not exceed five per cent of the specified charges. The calculation of loss under this policy form is shown on Exhibit G.

COMMENTS ON CONTINUING EXPENSES

The following expenses are generally conceded to be continuing expenses on all

EXHIBIT F

WORK SHEET FOR THE CALCULATION OF BUSINESS INTERRUPTION LOSS UNDER THE TWO-ITEM POLICY FORM

Under Item No. 1.

1.	Loss of gross earnings during period of interruption—(Calculated as in Exhibit E)		$.....
2.	*Deduct*—Cost of heat, light and power for period of interruption	$.....	
	—Ordinary pay roll for period of interruption	$.....	
3.	Sum of items listed under No. 2		$.....
4.	Deduct No. 3 from No. 1		$.....
5.	Non-continuing expenses for the period of interruption—(Itemized as on Exhibit E)	$.....	
6.	Total of non-continuing expenses		$.....
7.	Loss under item No. 1 of policy—Deduct No. 6 from No. 4		$.....

Under Item No. 2.

8.	Wages actually paid during the period of interruption to ordinary non-essential employees, not included under Item No. 1 of the policy and for which no services were received nor was any recovery received for salvage operations under a policy for damage to physical assets — Loss	$.....

Total Loss Under Policy.

9.	Sum of No. 7 and No. 8	$.....

losses where the assured expects to resume business. This list is not necessarily inclusive of all continuing expenses.

Insurance — Liability and Fire
Insurance — Group Life
Insurance — Auto
Rent — Ground — (and buildings in some cases)
Salaries — Officers, directors, superintendents, artists, department heads and skilled labor
Taxes — Realty and Business.

The following expenses are uninsurable under any of the three types of policies:

Bad debts
Collection expense
Business interruption insurance premium for the hazard involved
Profits or income taxes.

EXPENSES INCURRED TO REDUCE THE LOSS

In the case of a business interruption loss, each policy form implies that the assured must exercise all due diligence in resuming business and terminating the

EXHIBIT G

WORK SHEET FOR THE CALCULATION OF BUSINESS INTERRUPTION LOSS UNDER THE GROSS PROFITS POLICY

1.	Annual net profit—(Before income taxes)		$ .....
2.	Insured standing charges —		
	(a) Rent	$	
	(b) Municipal taxes	$	
	(c) Insurance	$	
	(d) Stand down charges—heat, light and power	$	
	(e) Salaries of executives and essential personnel	$	
	(f) Wages of foreman and skilled employees	$	
	(g) Auditing and legal retainer fees	$	
	(h) Depreciation of fixed assets not damaged by fire	$	
	(i) Advertising under contract	$	
	(j) Postage and telephone	$	
	(k) Interest on mortgage, bonds, loans, etc.	$	
	(l) Miscellaneous continuing expenses—Not to exceed 5% of the total of 2(a) to 2(k)	$	
3.	Sum of 2(a) to 2(l)		$ .....
4.	Sum of 1 and 3 above		$ .....
5.	Annual net sales or production		$ .....
6.	Percentage of 4 above to 5 above—(Percentage of gross profit		..... %
7.	Loss of sales or production during period of interruption—(See Exhibit D)		$ .....
8.	Loss under policy—Percentage of gross profit (6) applied to loss of sales (7)		$ .....

loss. In many cases, by a temporary rental of machinery while his own is being repaired, payment of overtime rates, premium payments for early delivery of replacement machinery or similar expenditures, the insured can shorten considerably the period of interruption and lessen the amount of the loss.

For this reason, all business interruption insurance policies contain a clause which stipulates that the insured will be indemnified for such additional expenses incurred to reduce the loss. This clause, however, limits the amount of recovery thereunder to the amount by which the loss is consequently reduced.

In view of this clause, the insured must keep a complete and detailed record of such expenses, if incurred. This record is usually established by creating a special account or work order in the records. It is essential, in this case, to keep full details and vouchers for the insurance company's adjuster to examine.

Because of the limitation of recovery under this clause, it is necessary to estimate what further loss of sales would have been incurred if the additional expenditures had not been made. This is done by projecting how much longer the interruption

of business would have lasted if the additional expenditures had not been made, and calculating the probable loss of sales in the same manner as the actual loss of sales was calculated. (See Exhibit D.)

Having calculated what the loss of sales would have been without reducing the period of interruption, the loss can then be calculated on this basis. If the amount then calculated exceeds the actual loss by more than the amount of additional expense incurred to reduce the loss (and this is usually true), the insured will recover for the total cost of these expenses. If, on the other hand, the additional expenses exceed the reduction of the loss, the policy limits the recovery to the amount of such reduction. This is to protect the insurance company against having to pay an insured for unwarranted expenses.

APPLYING THE CO-INSURANCE CLAUSE

As previously stated, all business interruption insurance policies contain a co-insurance clause. In Canada the gross earnings policy form contains a co-insurance clause which provides that the insurance should be carried for an optional percentage (50, 60, 70 or 80%) of the insurable value. The two-item contribution policy form contains an 80% co-insurance clause and the gross profits policy form contains a 100% co-insurance clause.

Having determined the amount of the loss and expenses incurred to reduce the loss, it is then necessary to ascertain whether or not the requirements of the co-insurance clause in the policy have been complied with.

The amount of insurance required under each policy form is calculated in the manner previously described and illustrated on Exhibits A, B and C. If the amount of insurance carried is equal to, or in excess of, the amount required, the full amount of the loss plus additional expenses will be paid under the insurance policy. However, if the amount of insurance carried is less than the amount required, the amount of the loss recoverable by the insured is determined by the following formula:

$$\frac{\text{Insurance Carried}}{\text{Insurance Required}} \times \text{Amount of Loss} = \text{Loss Recoverable.}$$

It may be seen, therefore, that if sufficient insurance is not carried, the co-insurance clause contained in the policy will reduce the amount of the loss recoverable and cause the insured to become a co-insurer to the extent of the deficiency.

The gross profits policy form also subjects expenses incurred to reduce the loss to the same co-insurance penalty. Therefore, under this policy form, if the amount of recoverable loss is reduced for this reason, the additional expenses recoverable are reduced in exactly the same proportion. The gross earnings policy form and two-item contribution policy form however do not contain this provision. Under these two forms, the recovery of additional expenses is not reduced by the application of the co-insurance clause.

PARTIAL LOSSES

In the foregoing discussion of business interruption losses, consideration has been given only to cases in which a complete shut down of a business for a period of time is involved. This is usually referred to as a total loss. In actual practice,

however, it is not uncommon for the insured's business to be affected by fire or similar disaster in such a way that one or more departments may remain unaffected and continue to operate. This is referred to as a partial loss.

If the sales and expenses applicable to the departments shut down by the fire can be separately established, there should be no difficulty in determining the amount of the loss. However, if such is not the case, it is usually simpler first to calculate the loss as though there had been a complete shut down. The recovery of profit and continuing expenses from the departments which continued to operate is then treated as a reduction of the loss. Any additional expense incurred in the partial operation is treated then as additional expense incurred to reduce the loss.

WHAT SHOULD BE COVERED

In considering the question of what to cover, we should consider the position of the individual or firm whose premises have been destroyed by fire. They must reinstate the building, equipment and inventories. That is simple enough because adequate fire insurance will provide the necessary funds.

Reinstatement of physical properties will take some time, however, and, meanwhile, the business will be at a standstill. During this time the costs of mortgage interest, staff salaries and other expenses will still continue. Where will the money come from to meet these charges, not to mention the replacement of profit which the firm normally enjoys? The answer to this question points out that business interruption insurance must provide the funds to replace profits and pay all the expenses which continue during the period of shut down.

When a risk is written on the gross earnings policy form, there is no problem as to what to cover because the policy requires that the amount of insurance shall be equal to sales less the cost of raw material or merchandise purchased. In other words, under this policy all items of expense are covered except the cost of raw materials or merchandise purchases. This cost would cease in the event of business interruption and is of no concern.

When a risk is written on the two-item contribution policy form, all items of expense are covered under the terms of Item No. 1 of the policy except raw materials and merchandise purchases, ordinary labor and heat, light and power. This policy differs from the gross earnings policy form in that ordinary payroll and heat, light and power are only covered if the insured elects to cover them. Ordinary payroll is covered for a period of not less than 90 days.

The gross profits policy form is a form which makes it necessary for the insured to choose the items of expense which he wants covered. In doing so, he must keep in mind that certain expenses, such as telephone and office clerks' salaries, which would cease in the event of a long shut down, would not cease if the shut down were short in duration. The insured must therefore cover all items of this nature or take a chance on losing somewhat if he should incur a loss of a short duration. In addition to net profit, the expenses usually covered under this type of policy include the following:

> Advertising under contract — auditing and legal fees — depreciation of fixed assets—insurance premiums—salaries of officers and key employees—directors' fees—realty and business taxes—rents—heat and light—mortgage and bank

interest and miscellaneous (not exceeding five per cent of specified expenses).

THE VALUE OF THE BUDGET

Business interruption insurance is a means of protecting the future earnings of a business in the event that the business is prevented, by fire or similar disaster, from earning sufficient to provide for normal anticipated profits and those expenses which carry on even though productivity ceases.

Because the purpose of the insurance is to insure future earnings, it is not enough merely to place the insurance, giving consideration only to what has happened in the past year. On the contrary, to insure to the best advantage, it is necessary to anticipate what the earnings, plus insured expenses, are going to amount to in the next 12 months. In the case of the average small business, this is usually done by establishing a trend in sales, either upwards or downwards, from past performances and other known factors. The percentage of anticipated change in sales is then applied to the past year's figures to establish the amount of insurance required.

However, in a more complex business, as most manufacturing concerns are, it is not sufficiently accurate to use this rule of thumb. Such a rough estimate of future activities is no more suitable for determining business interruption insurance requirements than it is for management to use as a tool in the direction of the business during the next year. Obviously, a more scientific and accurate approach is required to forecast business transactions suitably for the following 12 months.

Fortunately, most businesses of any size now make a practice of preparing an annual budget which will provide management with a detailed forecast of the various revenues and expenditures for the coming year. This budget is the result of a very seriously considered forecast of sales by those responsible for this activity within the business. The various cost factors, in relation to the sales forecast, have been carefully projected by the heads of the various departments concerned with production. Administrative, selling and financing expenses have then been carefully forecast. It will be seen, therefore, that the annual budget is a carefully prepared estimate of the business' sales, expenditures and profits for the coming year. There can be no better source of information for the data required in establishing the correct amount of business interruption insurance.

A carefully prepared budget, compared to actual performance, will also be of great assistance in settling a claim for loss in the case of an interruption of business. If the insurance was originally placed for the amount indicated by the budget, it is a simple matter to determine the adequacy of the coverage by comparing actual results to the date of the loss (or the last month end prior thereto) to the budgeted figures for the same period.

By using the same comparison of actual results to budget, it can be established readily whether or not the budgeted figures are a reasonable projection of the results of business if no interruption had occured. The insurance company's adjuster, under such circumstances, will usually accept the budget figures, subject to any deviation indicated by this comparison, as a reasonable estimate of what the business would have done under normal circumstances. This makes the adjustment

of the loss relatively simple and the use of the budget for this purpose can be of great value, both to the insured and the insurance company's adjuster.

USE OF STANDARD COSTS FOR BUSINESS INTERRUPTION INSURANCE PURPOSES

When the volume of production of a manufacturing business remains fairly constant throughout the year and, at the same time, the fixed and continuing charges are reasonably constant, the foregoing methods of determining insurable values and losses should be satisfactory, both as a guide to a sound insurance program and for the calculation of losses. However, it is usually found that the volume of production varies from month to month. In such cases it is sound practice to determine the insurable values monthly as a guide to management in its administration of the insurance program.

While the determination of monthly insurable values can be accomplished from the general books by averaging annual insurable volume and production, the results obtained by this method are not accurate. The most satisfactory and accurate method of providing the necessary data is available to the concern that uses a standard cost system controlled from the general books of the company.

It should be emphasized at this point, that standard costs established by a system which is not controlled by the general books cannot be sufficiently documented to support a claim in the event of a business interruption loss. Such a system, however, might provide some guidance to management in establishing insurable values.

A monthly report, based upon the calculation of insurable values arrived at by multiplying estimated quantity production times value based on standard costs, will greatly simplify the establishment of a sound program. Those costs which are insurable under the contract, plus insurable variances, constitute the unit values that are used in determining insurable values. With the stardard costs static, or changing only rarely, the only amounts determinable each month are the monthly variances from insurable standards for those items in the cost structure which are insurable.

The method of determining the required information will be largely governed by the type of accounting system in use and the manner in which the standard cost system is tied into the regular accounts of the company. It must also be recognized that, while some companies control all elements of cost by a standard cost system, others apply standard costs only to those costs which relate to the manufacturing operations of the business. For these reasons, no attempt will be made in this thesis to describe in detail a system of determining the information required for a business interruption insurance program for the standard cost system. It appears to be preferable to describe here only the principles involved.

The first step in all cases is to divide each factor in standard unit costs into its insurable and non-insurable elements. This is accomplished relatively easily by the use of a columnar work sheet. No division of raw material standards is necessary because they are not covered by business interruption insurance. Neither is a breakdown of direct labor required because the entire amount of direct labor is covered unless the insured does not wish to cover this item. It has been previously mentioned that, under the two-item contribution policy form and the gross profits policy form, the coverage on ordinary payroll is optional.

The insurable portion of standard unit costs is then subject to adjustment in

accordance with monthly variances from insurable standards. These variances are determined by analysing the monthly variances produced by the records. Any portion of the variances which can be established as resulting from production variation presents no problem because a strict percentage allocation between insurable and non-insurable values should arrive at a satisfactory insurable value for our purpose. However, variances resulting from cost or price factors must be taken into account and the insurable portion of standard unit costs adjusted accordingly.

For further reading

BUSINESS INTERRUPTION INSURANCE, by M. M. Hahn, *Canadian Journal of Accountancy*, Sept. 1959.

THE USE OF STANDARD COSTS IN BUSINESS INTERRUPTION INSURANCE, by K. E. Pettijohn, *Cost and Management*, Jan. 1955.

SERIES OF LECTURES, by George F. Burne, London & Lancashire Insurance Co. Ltd., Toronto, Ont.

EDUCATION—AN INVESTMENT, NOT AN EXPENSE

by KURT R. SWINTON
to the 1960 Ontario Conference
President, Encyclopaedia Britannica of Canada Ltd.
Chairman, National Committee, Canadian Conference on Education

IN THE PAST few years many thousands of words on education have rolled forth in articles and speeches. Indeed, since the first Sputnik sounded its weak little beep, there has been an almost continual cry in the land, such amplification has this tiny sound had.

To anyone not caught up in all this—to the businessman with his production worries and the professional man contending with his clients' problems—it may by now seem a constant drone, the cry of yet another pressure group contending for his time and contribution.

To him, education represents an expense, with only a few overtones of investment. That, of course, is where he is mistaken. Every cent contributed to education, every moment spent in its furtherance and extension, is an investment which pays returns, direct returns, to the individual, as well as to society as a whole.

As education goes, so goes each one of us and every one of us. Our future and that of our society depend for their development, for their very existence, upon it. The training of our doctors decides our lives and deaths, the education of agronomists and chemists insures our food supply and its purity. Education built the machines upon which our economy is based, and education—though sometimes one wonders what type—charts our course of government.

More important, we walk in a world of mushroom shadows, where salvation lies in clear thought and trained minds. If ever the world needed philosophers and thinkers, the time is now.

With this in mind, we who are deeply interested can be forgiven, I hope, our seemingly incessant reiteration. We fight a war on two fronts, and that is always a complicated business requiring steady fire lest you be overwhelmed.

On the one hand we have the professional educators, who distrust us as meddling amateurs. On the other we have the general business community, which is apathetic both towards our meddling and our message.

I freely confess that the educators and teachers do have a point. Many amateurs have dabbled in education, frequently with disastrous results. We have no right to interfere with technical questions of curriculum and teaching methods. That is the profession of the educators, who have been trained in these matters. We are as entitled to tell them their business as we are to tell a physician or chemist his. But society does have the right to determine the objectives of education, the basic policy, as it has the obligation to provide the funds. When we deal with aims, rather than methods, we are well within our proper sphere, for those aims chart the course of our country and our culture. They are not the preserve of any one group.

For the apathy of the businessman I cannot find as great a justification. In my view he has a four-fold stake in education, an interest which should make him the keenest of advocates:

As a father he has a vital concern with the training his children receive. As a taxpayer he should be conscious of the way in which his money is spent. As a citizen he must see the interdependence of education and democracy. And as an employer he is the largest consumer of the product of our colleges and universities. Business today gobbles up trained men, and business today has a deep, vital, and legitimate interest in their training.

The businessman who understands that stake and interests himself in the field will find a challenge worthy of his time and effort. Education today is not a static affair. Totally new approaches are needed, and soon.

For this there are a number of reasons, but three of them, which I will deal with in more detail, are:

> The rate at which science is advancing; the political changes which have taken place since the second world war; and the emergence of new concepts of education.

We have all seen the changes which science and technology are making. But it is difficult, even witnessing the change, to understand its scope. Dr. J. Robert Oppenheimer has estimated that science is doubling its achievements every 10 years. Eighty percent of the Du Pont Corporation's products did not even exist a decade ago. If that seems astonishing, hark to the next figure. It has been reliably estimated that 90 percent of all the scientists who ever lived are alive today.

These changes in themselves are enough to demand new approaches to the problems of education. But over that same 10 years other developments have occurred which reinforce the need. I mean the growth of anti-European nationalism and the political expansion of totalitarianism.

The recent sessions of the United Nations have illustrated both phases of the changing world. The new nations have been there in force—the non-white, non-affluent, non-democratic nations, whose roots are not deep and who look to us for the minds and the machines necessary to bring them forward out of the past and into the future.

And what of education itself? I mentioned earlier that new concepts have arisen. To be properly impressed with just how radically different these concepts are, take a short step back to the last century. Then education was the privilege of the few. From that we moved to universal education and to an attempt at insuring a rough equality of opportunity—though in North America it cannot be said that we have reached such equality as yet.

These are major steps forward and require a radical alteration in concept. But internal and external changes continue, and they require still further steps. Our economic system is changing. Capital is declining in influence and prestige, and power is being transferred to professional managers.

Capital is now, in fact, less important than ability, knowledge and brains. Certainly money is easier to find, if one follows the approved procedure, than are talented, trained men. In many business firms today, expansion is limited by a lack of top-quality manpower, not capital.

In the same case, investment in physical capital is dependent on and less important than investment in the improvement of men—the men we need today and will need still more tomorrow. Money spent on education is thus an investment: an opportunity, not an expense.

To see it in that light we need a totally different outlook, a different yardstick and test. We cannot continue to consider education something to which we give only what we can afford to spare from other forms of consumption or social services. To the test of "Will it pay for itself?" we can only find in the positive, then ask, *not* "How little can we get by with?" *but* "How can we find some more to invest?"

I have attempted to make clear that contributions made to education—in interest, energy, time, and money—bring personal benefits to every member of the community. But more than that, such contributions are a social obligation. Lack of education is a social ill, as tuberculosis is a social ill. A majority of the unemployed are untrained, unskilled, uneducated. Unemployment snowballs with effects on the whole of society, and that society must take steps to protect itself. Two steps present themselves. Education must reach greater numbers in the generations growing up, and education should be offered the unemployed. Certainly that group should have the incentives to study. If the incentive of preparation for re-employment is not enough, perhaps some such tangible incentive as increased unemployment grants for those taking approved teaching or training might be the wise course.

Now I am going to turn for a moment to taxes, a subject I feel is close to your hearts. The tax structure provides for obsolescence of equipment and machinery, a provision which productivity insures we can afford. But it makes no provision for obsolete people, for those whose education has been outmoded by swift-rushing developments. That we cannot afford.

As doctors are expected to keep up with the latest techniques in their field, so should our trained men. Perhaps the answer is a continuous process of education, or perhaps a compulsory refresher course at 40 years of age, or both.

Certainly, to that end, the main purposes of a modern school system should be the teaching of the knowledge of learning, the instillation of a love of learning. Then our graduates can go forth ready to follow that Grail of knowledge all their days, men who will fit in any world which develops, guide it and—if need be—change it.

Education is not just one special problem. It is a fundamental base from which all other problems can be attacked. And it needs a real commitment from every one of us, not just lip service.

H. G. Wells said, "History is a race between education and catastrophe". The race has grown close in our time. It grows closer each day. And education must win.

Canadian Business and Technical Index Available

An index listing Canadian business and technical periodicals is now available from the Toronto Public Libraries. Prepared by the Bibliographic Centre, the index lists 36 periodicals not completely indexed in any other publication. It is issued bi-monthly in loose-leaf form, with semi-annual and annual cumulations at the following price:

1960 annual cumulation (loose-leaf binding)	$20.00
1961 full year's subscription	$20.00

The index is available from: Toronto Public Libraries,
College and St. George Streets,
Toronto 2B, Ontario.

S.I.C.A. News

COST AND MANAGEMENT SURVEY

The returns from the survey that was inserted in over 8,500 issues of the October **Cost and Management** have now been tabulated. Although each day's mail still brings a few late voices that would be heard, the immediate response to the survey was very good. However, we would still welcome an opinion from those who have not yet expressed themselves.

When approximately 10% of the forms were returned, a tabulation was made. Subsequent receipts were reviewed, but no change of any proportion is evident over the original tabulation.

The weighted average readership indicates that the journal is read quite extensively. The returns tabulated indicate that the "Economic Scene" is read by 78%, with "Topical Comments", **The Newsletter**, and the Editorial very close runners up.

Some of the other significant statistics are:

About 83% of readers keep a permanent reference file of the journal.
About 50% of the readers pass their copies on to at least one other person.

The suggestions for change proved interesting. About 60% of the returns were very complimentary; the remainder offered constructive suggestions for change. The following are the more significant requests. The number in brackets indicates the times that the request was repeated. These suggestions are being reviewed by the Publications Committee, and future changes will be made with your interests in mind. The comments after the suggestions are not meant to dismiss the suggestion, but rather to outline our present practice on the subject.

Incorporate the S.I.C.A. and Student Newsletters into Cost and Management

This request was expressed by more readers than any other suggestion for change. The Committee had decided to make this change with the new year.

Progressive Index (9)

A comprehensive library index is now issued every year, and a yearly summary of the journal's contents appears in each December issue.

A Classified Advertising Index (9)

Ads for positions open and help wanted are now accepted but a classified section is not designated. The time lag between closing date and publication is almost a month, which is rather long for most ads on positions.

Articles on Computers and Other Office Machines (10)

Occasionally articles are published on machine accounting, but no discussion is printed on the relative merits of kinds of systems or machines. Our Library has several books on the subject and receives the monthly journal **Machine Accounting** which covers this area quite well. The Committee is considering the need for further coverage in this area.

Increase Number of Technical Articles (17)

Despite a lower readership of the technical articles over the shorter features, there were more requests for an increase in this section than in any other area except the **Newsletters.** This indicates that, while not all articles are read by all readers, there is a very high percentage of readers who select articles of interest to them in each issue.

Request for Articles on Fifteen Different Specific Subjects (39)
More Management Articles (18)

These two requests (along with the requests for articles on machine accounting and more technical articles) compete for space in the journal. This raises the question: are the articles of sufficient variety to give the largest number of readers what they want? The Committee is studying the content of **Cost and Management** in an effort to strike a reasonable balance in the subjects covered.

Articles Too General (8)
Articles Too Specialized (10)

These two requests also oppose each other—the odds are about even.

Articles on Taxation (19)

This was a popular request. A few articles on taxation and an editorial on the budget are published each year. This area is given extensive coverage by the Tax Foundation, whose publications are received in the library. The Society tries not to duplicate service in an area well covered by other Canadian associations.

Review Articles in Other Journals (9)

Each month the "Editor's Choice" feature of the journal is designed to give you a capsule summary of a few of the articles that are received in our library and are available on loan.

More Member Participation and Canadian Writers
More News on ALL Provincial Society Activities

These two semi-critical requests are most welcome. Your editor would be only too happy to receive more manuscripts from Canadian writers and consider them for publication. In 1960 there were 19 technical articles out of 34 that were written in Canada, including six theses. Considerable effort is being made to obtain news and photos of activities in all chapters across Canada.

From this short report on the survey, you may appreciate that the returns have been most interesting and revealing. You can also see that there is a wide divergence in desires and interests between the readers. Obviously, no magazine can be all things to all people. It is the purpose of the Society to publish a journal that will be of the greatest service to the readers. While maintaining a balance of interest, it is important not to repeat information on a subject that is more extensively covered by other journals specializing in certain fields. Most of the better business technical journals published are indexed in the library. If you find that there is a specific area of interest to you, please drop the librarian a line and make your request known.

Our thanks to those who have taken a moment to fill out and return the questionnaire and, at the same time, offer constructive criticism—a summary of your answers is being studied by the Publications Committee who are most anxious to serve you and to improve **Cost and Management** continually, so that it may be recognized as a magazine of value in the field of business.

PUBLICATIONS AND TECHNICAL SERVICES

The S.I.C.A. library at the national office is used extensively by members from coast to coast. There is a heavy demand for student theses and current business periodicals which are kept and indexed there. However, your librarian finds that there is not the call for books one would normally expect. If you consult the **Library Index**, you will find there is an excellent selection of the best books on accounting, finance, and other phases of business management. While the shorter articles may deal with a particular aspect of a problem area, the larger texts give a broader treatment of the many implications and relationships in the industrial area. You are cordially invited to make more use of these expensive and valuable books.

CHAPTERS AND MEMBERSHIP

National Committee Reviews Chapter Activities

Representatives from almost every province met in Toronto on Saturday, November 12, to consider an agenda so full that even an all-day session did not allow adequate discussion. Formed for the first time on a truly national basis, the Committee is made up of the Chairman of each provincial Committee on Chapter Activities.

A common agenda embracing some future planning concepts of far-reaching dimensions was considered first by each provincial Committee. The views and reactions of each province were then presented by each provincial representative at the national meeting.

Although some widely divergent views were expressed on many points, all agreed that the meeting was most worthwhile. It afforded the first opportunity for an open and frank discussion of problems facing chapters from coast to coast and has given the national office a better appreciation of how it can assist chapters in solving some of these problems.

Aside from our educational program, the heart of the Society lies in the chapter meetings that are presented for **you**—the membership at large. Herein lies the root of the problem which becomes more complex as one ponders upon it: what can be done to attract more members to more chapter meetings?

One of the unique characteristics of the Society is that its membership is comprised of people having a wide range of interests in terms of levels of responsibility and areas of specialty. The problem then is to develop an over-all program that will appeal to all segments of membership through at least part of the year's activities. This does not mean that anyone expects members of such wide interests to attend a meeting every month. The problem is how to attract **all** members to attend at least **some** meetings throughout the year so that S.I.C.A. services and activities will be shared by a greater percentage of members than at present. The problem is not so much that of increasing attendance but of providing better service for **you**, the membership.

Committee members representing chapters from coast to coast have done some intensive "soul-searching" in this matter and, being honest enough to admit that new concepts of chapter meetings and programs might be necessary or desirable, are willing to experiment along the lines considered at the meeting.

Perhaps part of the solution to some of these problems lies within the membership itself. It could be that the problem which concerns all of us can be eased somewhat by each member honestly appraising his own participation in Society affairs in the light of Theodore Roosevelt's conviction that "every man owes part of his time to the upbuilding of the profession to which he belongs."

S.I.C.A. Membership Forges Ahead

It can be said without hesitation that S.I.C.A. is a fast-growing accounting organization.

Only five years ago in the annual report of the Canadian Society for the year ending April 30, 1955, it was stated with some pride that membership was slightly in excess of 4,500, made up of about 800 Registered Members, 800 General, and about 2,900 members on course.

In the intervening five years, membership has actually doubled. At the end of November 1960, total membership stood at 9,200, made up of 1,344 Registered, 1,432 General, and 6,400 Student Members.

The usual adjustment downward will, of course, be made shortly when deletions are processed because of student "drop-off" and non-payment of member dues. However, in comparison with previous years at the same period, the Society is rapidly nearing the 10,000 mark.

NATIONAL CHAPTER ACTIVITIES' COMMITTEE HOLDS FIRST MEETING—The Royal York Hotel in Toronto was the scene, on November 12, of the opening meeting of the National Committee on Chapter Activities. Pictured above with the National President and staff members are provincial representatives on the Committee. Front row, from left, they are: Emerson Stewart, Nova Scotia; George Greenhough, National President; Miss C. Zouboules, Staff Member; Alf Screaton, Chairman; J. Nelson Allan and Alan Barley, Staff Members. Back row, from left: John Griner, Ontario; Jack Kempster, New Brunswick; Gil Howard, British Columbia; Ross Humphries, Alberta; John Drudge, Manitoba; Frank Wilson, Manitoba; Yves Dion, Quebec.

One of the most encouraging trends this year is the unusually large increase in first year registrations in comparison with other years. This, in itself, augurs well for the future expansion of the Society.

The amazing growth of the Society in members, its qualitative development in the many areas of its activities, and the high esteem in which the Society is held by other professional accounting bodies and by business men generally are reasons for every member to be justly proud of his affiliation with S.I.C.A.

Chapter News

Readers will note that several features are missing from this issue, namely "Around the Chapters", "Chapter Calendar", and the inter-chapter competition standings. These features, formerly in the **S.I.C.A. Newsletter**, recorded news items for the month immediately preceding publication. This was possible since the **Newsletter** was printed by the national office and inserted as a supplement to **Cost and Management**, which has a much earlier deadline for copy.

Hereafter, some of the items previously included in the **Newsletter** will not be carried in **Cost and Management**, but will be included in the **Chapter Directors' Letter.** Chapter news each month will be confined to the reporting of the most significant happenings or developments in a few of the chapters. In selecting these news items, the major factor of consideration will be the success or contribution of the activity to chapter programming generally, or the significance of the event in building a particular chapter's strength.

PERSONALS

DAVID IBBOTSON, R.I.A., of the Bay of Quinte Chapter, has been appointed Chief Accountant of Central Bridge Company Limited, Trenton, Ontario.

HARRY TERVO, of Strategic-Udy Metallurgical & Chemical Processes Ltd., Niagara Falls, has been promoted to Assistant Treasurer of his company.

R. J. NUNN, formerly Office Manager of Auto Specialties Mfg. Co. (Canada) Ltd., has been appointed Treasurer of the company. Mr. Nunn is a General Member of the Windsor Chapter.

E. G. PITTMAN, F.C.I.S., R.I.A., Secretary-Treasurer of the Newfoundland Margarine Co. Ltd., has been appointed a Director of the company. Mr. Pittman is a member of the St. John's Chapter.

ROBERT DE COSTER, L.S.C., C.A., a General Member of the Quebec Chapter, has been appointed Treasurer of Les Anciens de Laval.

LEOPOLD GIRARD, R.I.A., of the Quebec Chapter, was recently elected Second Vice-President of l'Association Professionnelle des Industriels, Quebec section.

EMILE GIGNAC, R.I.A., of the Quebec Chapter, has been elected Treasurer of the Sillery section of La Société St-Jean Baptiste.

JOHN GRUNDY, Treasurer and Controller of Sherbrooke Machineries Ltd., Sherbrooke, Quebec, has been appointed Treasurer and Director of the company. Mr. Grundy is a Council member of the Quebec Society.

B. A. ROBINSON, P. Eng., R.I.A., Vice-Chairman of the Vancouver Chapter, has returned to the University of British Columbia to study for the M.B.A. degree.

CONFERENCES AND SEMINARS

Great plans are under way and big things are afoot for the 40th Cost and Management Conference in Vancouver next June. The Conference Committee under Ernie Owen is determined that the Society's 40th birthday will be celebrated in fitting style. All details, they say, are top-secret until the first announcement is mailed to the members later this month. However, they mince no words in claiming that this will be the greatest national conference ever. The official theme will be "Meeting the Profit Squeeze." The unofficial theme, says Ernie, will be "Life **Really** Begins at 40!" Watch for the announcement. The ingenuity of the Vancouver boys is too well known for anyone to doubt that they will live up to the advance billing.

Three seminars were presented during the past autumn months. "The Why and How of Budgeting," moderated by Prof. Al Riverin of Laval University and Geoff Edge of Chemcell Limited in Montreal, was very well received by a goodly group at Dalhousie University in Halifax during October. In November, "Planned Insurance Buying" was the seminar subject with representatives of the London and Lancashire Insurance Company teaming up with Rod C. Hughes, Insurance Broker (Reed, Shaw and McNaught, Toronto) to do the moderating at the Seigniory Club in Montebello, Quebec. Also in November, a seminar on "Electronic Data Processing", held at the Guild Inn, Toronto, was over-subscribed. Members of International Business Machines Company Limited and Dr. Harvey Gellman, well-known Data Processing Consultant, were the principals in that program which featured a business game in which registrants competed with an electronic computer in problem-solving. The winner of the game was not announced publicly, but it is understood that a number of "doubting Thomases" have developed a new respect for the mechanical brain.

All members have by now received a copy of the brochure listing the seminars scheduled for 1961. Those interested in attending any of the presentations are invited to contact the seminar registrar at the national office. No registration is considered binding until two weeks before the seminar. In the meantime, this will assure that a place in the group of your choice will be held open.

STUDENTS AND COURSES

This issue of **Cost and Management** includes a Student's Section which will replace the **Student Newsletter.**

The inclusion of this section in the magazine will allow us to publish every month material of interest to students, whereas the **Student Newsletter** was published on a more irregular basis. We hope this material will be of interest to all members of the Society. Our present plans call for the regular publication of examination problems with the addition from time to time of articles of general interest in the field of education.

EXAMINATIONS 1960

ACCOUNTING I.

QUESTION 4 (15 marks)

The proprietor of X Retail Store has followed the practice of recording sales revenue when cash is collected from customers and of recording purchases and expenses when cash is paid. He has prepared the following income statement for 1959:

X Retail Store
Statement of Income
for the year ended, December 31, 1959

Cash received from customers	$ 46,100
Cash paid for merchandise	31,800
Gross margin on sales	14,300
Expenses paid	10,600
Net Income	$ 3,700

You have been asked as an accountant to examine the store's operating results and have obtained the following additional information:

(i) Merchandise inventories:	
December 31, 1958	$ 6,800
December 31, 1959	4,700
(ii) Accounts payable—Merchandise:	
December 31, 1958	3,600
December 31, 1959	4,100
(iii) Accrued expenses:	
December 31, 1958	1,600
December 31, 1959	1,900
(iv) Accounts receivable (all collectible):	
December 31, 1958	5,200
December 31, 1959	4,800
(v) Estimated depreciation on store fixtures for the year	2,000

REQUIRED:

Prepare a corrected income Statement on an accrual basis for the year ended December 31, 1959. (Submit computations.)

SOLUTION 4

X Retail Store
Statement of Income
for the year ended, December 31, 1959

Sales		$ 45,700
Cost of goods sold		34,400
Gross profit on sales		11,300
Operating expenses:		
Depreciation	$ 2,000	
Other	10,900	12,900
Net loss		$ 1,600

Computation of Sales:	
Cash received from customers	$ 46,100
Deduct accounts receivable—December 31, 1958	5,200
	40,900
Add accounts receivable—December 31, 1959	4,800
Sales made in 1959	$ 45,700

Computation of Cost of Goods Sold:		
Cash paid for merchandise		$ 31,800
Deduct accounts payable—December 31, 1958		3,600
		28,200
Add accounts payable—December 31, 1959		4,100
Merchandise purchased in 1959		32,300
Add merchandise inventory—December 31, 1958		6,800
		39,100
Deduct merchandise inventory—December 31, 1959		4,700
Cost of goods sold in 1959		$ 34,400
Computation of expenses:		
Cash paid for expenses		$ 10,600
Deduct accrued expenses—December 31, 1958		1,600
		9,000
Add accrued expenses—December 31, 1959		1,900
Expenses incurred in 1959		$ 10,900

FUNDAMENTALS OF COST ACCOUNTING

QUESTION 4 (5 marks)

The Balla Printing Company distributes Manufacturing Overhead Expense to Monthly Production on the basis of Direct Labour Costs. The company uses an overhead figure of 150% which has been suggested by the Industry Association.

At the end of the current year, the Balla Company finds that Manufacturing Expense has been overabsorbed to the extent of $75,000.

REQUIRED:

(3 Marks)

(a) Submit three possible explanations for overabsorbed Manufacturing Expense of $75,000.

(2 Marks)

(b) Describe the proper accounting treatment to dispose of the $75,000 overabsorbed Manufacturing Expense at the end of the Company's fiscal year.

SOLUTION 4

(a) The overhead rate of 150% is obviously wrong and is too high.
The following could have caused the excess:
1. Change in wage level.
2. Increased efficiency.
3. Change in processes or methods.
4. Use of new equipment and facilities.
5. Longer working hours.
6. Greater volume of production.
7. Lower expenses.
8. Different type of business or more profitable line of printing.

(b) The $75,000 should be closed out proportionately to Cost of Goods Sold and inventory of Work in Process and Inventory of Finished Goods on basis of percentage which goods on hand are of the total goods produced during this period.

COMMENTS

Many students gave reasons that would have caused an underabsorption instead of an overabsorption.
The amount overabsorbed was too large to be closed entirely to Cost of Goods Sold for inventories could have been seriously overvalued.